



**Refugio Incident**  
**Summary of CTEH® Environmental Sampling Efforts**  
**July 7, 2015**

As part of response efforts, CTEH® began collecting product and environmental samples, i.e., water and/or sediment, on May 20, 2015. This environmental sampling has been conducted under a Unified Command-approved sampling plan. This report contains environmental sampling efforts completed to date by CTEH® in support of Refugio Incident response efforts. Table 1, below, provides a sample count for each type of environmental media collected by CTEH®. Table 2 provides a summary of TPH<sup>1</sup> data reported in water samples to date. Maps of environmental sampling locations are provided as attachments.

**Table 1: Environmental Preliminary Sample Summary**  
**05/20/2015– 07/06/2015**

Media	Matrix	Sample Count
Water	Surface Water	270
	Water Column	54
	Culvert/Flush Water	9
Sediment	Beach Sediment <sup>2</sup>	43
	Ocean Sediment <sup>3</sup>	15
Soil	Potential Backfill Soil/Sand	51
	Section Four Soil	34
	Trench Excavation/Section One Soil	63
	Section Two/Three Soil	8
	Section 1 - Background Soil	20
	Section 4 - Background Soil	20
Petroleum	Product/Tar Ball Sample	136
	Sheen/Seep	14

<sup>2</sup> Beach sediment samples are collected from both the intertidal zone and on dry sand above the intertidal zone.

<sup>3</sup> Ocean sediment samples were collected at the same location as the water column samples.

<sup>1</sup> For the purposes of this report, TPH represents a summation of TPH-Oil Range Organics (ORO), TPH-Diesel Range Organics (DRO), and TPH-Gasoline Range Organics (GRO).

**Table 2: TPH<sup>1</sup> Preliminary Data Summary<sup>4</sup>**  
**05/20/2015– 07/06/2015**

	Location	Highest Detection		Most Recent TPH Result Received	
		Date	TPH (mg/L)	Date	TPH (mg/L)
Water Column	D001-S	6/6/2015	0.228	6/6/2015	0.228
	D001-M	5/22/2015	0.1	6/6/2015	ND
	D001-D	6/3/2015	0.5	6/6/2015	ND
	D003-S	5/31/2015	0.189	6/1/2015	ND
	D003-M	No detections		6/1/2015	No detections
	D003-D	No detections		6/1/2015	No detections
Surface Water	SW01	5/26/2015	11.9	6/23/2015	0.052
	SW02	5/21/2015	677.111	6/23/2015	0.229
	SW03	5/26/2015	4.9	6/23/2015	0.054
	SW04	5/21/2015	5.5	6/23/2015	0.15
	SW05	6/3/2015	63.1	6/23/2015	0.66
	SW09	6/5/2015	6.9	6/21/2015	0.056
	SW10	5/21/2015	1.89	5/21/2015	1.89
	SW11	6/6/2015	2.3422	6/21/2015	0.9
	SW12	6/10/2015	5.1	6/21/2015	ND
	SW13	6/6/2015	1.9	6/21/2015	0.183
	SW14	No detections		6/9/2015	No detections
	LASW01	No detections		6/8/2015	No detections
	VESW01	No detections		6/9/2015	No detections

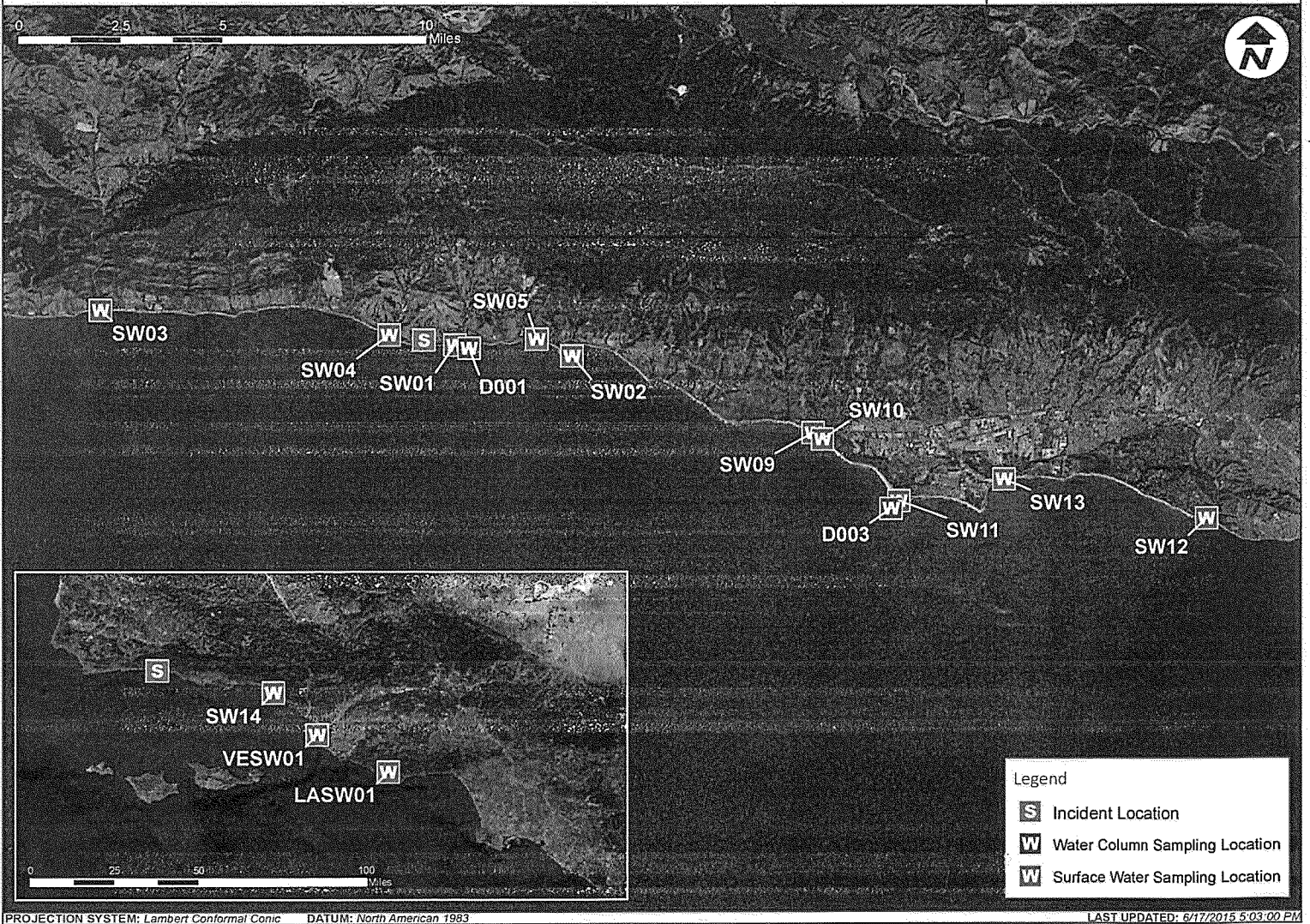
<sup>4</sup> The data presented within the table is considered preliminary and has not completed the complete QA/QC process.



## Water Sampling Locations

Refugio Incident | May 20, 2015 to July 7, 2015

Project: 107292  
Client: Plains All American Pipeline  
City: Gaviota, CA  
County: Santa Barbara





# Sediment/Sand Sampling Locations

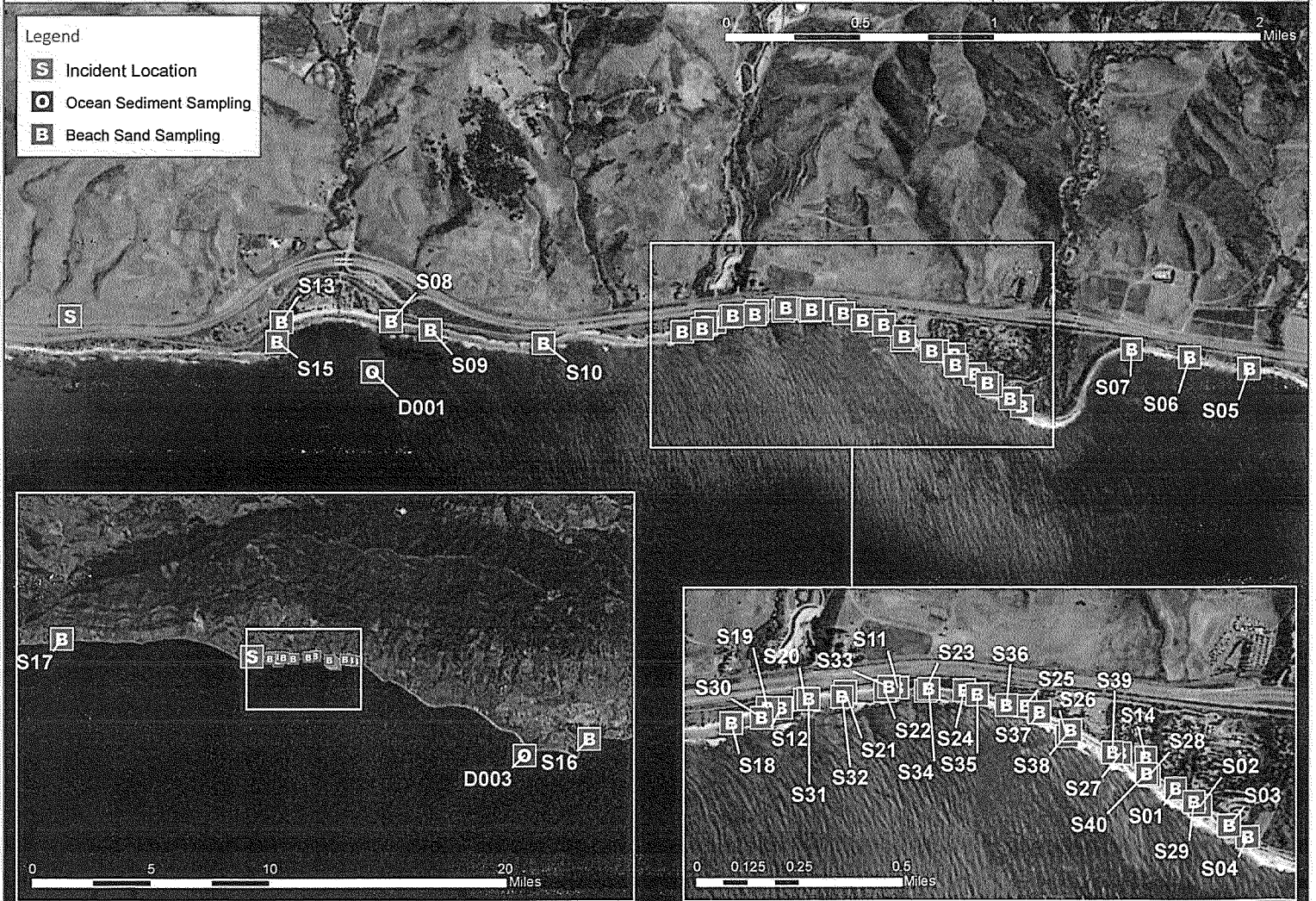
Refugio Incident | May 23, 2015 to July 7, 2015



Project: 107292  
Client: Plains All American Pipeline  
City: Gaviota, CA  
County: Santa Barbara

## Legend

- S** Incident Location
- O** Ocean Sediment Sampling
- B** Beach Sand Sampling



PROJECTION SYSTEM: Lambert Conformal Conic DATUM: North American 1983

LAST UPDATED: 6/23/2015 4:49:37 PM



**Refugio Incident**  
**Summary of CTEH® Environmental Sampling Efforts**  
**July 14, 2015**

As part of response efforts, CTEH® began collecting product and environmental samples, i.e., water and/or sediment, on May 20, 2015. This environmental sampling has been conducted under a Unified Command-approved sampling plan. This report contains environmental sampling efforts completed to date by CTEH® in support of Refugio Incident response efforts. **Table 1**, below, provides a sample count for each type of environmental media collected by CTEH®. **Table 2** provides a summary of TPH<sup>1</sup> data reported in water samples to date. Maps of environmental sampling locations are provided as attachments.

**Table 1: Environmental Preliminary Sample Summary**  
**05/20/2015– 07/13/2015**

Media	Matrix	Sample Count
Water	Surface Water	275
	Water Column	54
	Culvert/Flush Water	9
Sediment	Beach Sediment <sup>2</sup>	67
	Ocean Sediment <sup>3</sup>	15
Soil	Potential Backfill Soil/Sand	51
	Section Four Soil	39
	Trench Excavation/Section One Soil	63
	Section Two/Three Soil	9
	Section 1 Background Soil	20
	Section 4 Background Soil	20
Petroleum	Product/Tar Ball Sample	214
	Sheen/Seep	14

<sup>2</sup> Beach sediment samples are collected from both the intertidal zone and on dry sand above the intertidal zone.

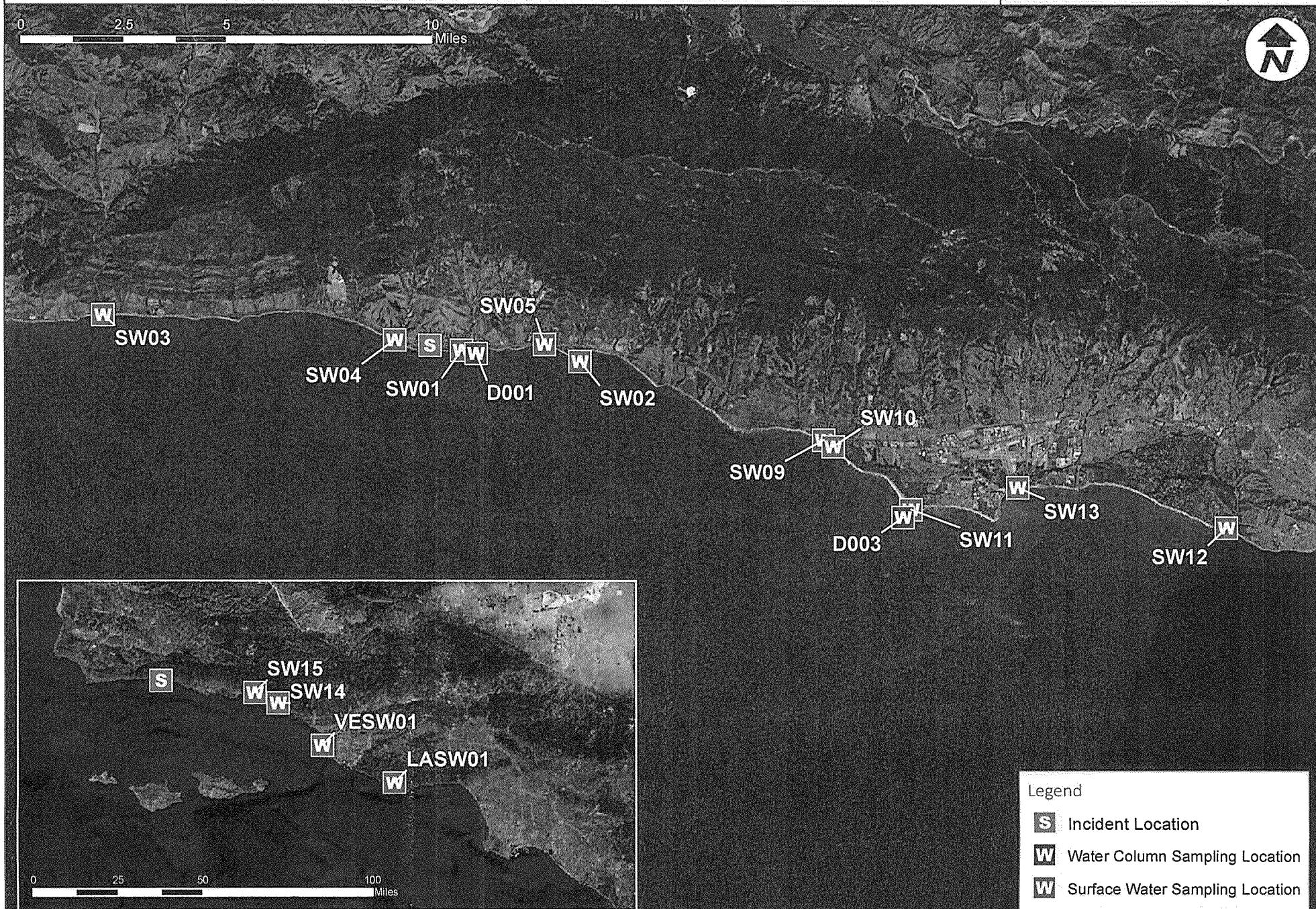
<sup>3</sup> Ocean sediment samples were collected at the same location as the water column samples.

<sup>1</sup> For the purposes of this report, TPH represents a summation of TPH-Oil Range Organics (ORO), TPH-Diesel Range Organics (DRO), and TPH-Gasoline Range Organics (GRO).

**Table 2: TPH<sup>1</sup> Preliminary Data Summary<sup>4</sup>**  
**05/20/2015– 07/13/2015**

	Location	Highest Detection		Most Recent TPH Result Received	
		Date	TPH (mg/L)	Date	TPH (mg/L)
Water Column	D001-S	6/6/2015	0.228	6/6/2015	0.228
	D001-M	5/22/2015	0.1	6/6/2015	ND
	D001-D	6/3/2015	0.5	6/6/2015	ND
	D003-S	5/31/2015	0.189	6/1/2015	ND
	D003-M	No detections		6/1/2015	No detections
	D003-D	No detections		6/1/2015	No detections
Surface Water	SW01	5/26/2015	11.9	6/29/2015	0.0837
	SW02	5/21/2015	677.111	6/29/2015	0.1761
	SW03	5/26/2015	4.9	6/29/2015	0.0581
	SW04	6/14/2015	16.6	6/29/2015	0.0646
	SW05	6/3/2015	63.1	6/29/2015	0.39
	SW09	6/5/2015	6.9	6/28/2015	0.0714
	SW10	5/21/2015	1.89	5/21/2015	1.89
	SW11	6/6/2015	2.3422	6/28/2015	0.068
	SW12	6/10/2015	5.1	6/28/2015	0.0782
	SW13	6/6/2015	1.9	6/28/2015	0.13
	SW14	No detections		6/9/2015	No detections
	LASW01	No detections		6/8/2015	No detections
	VESW01	No detections		6/9/2015	No detections

<sup>4</sup> The data presented within the table is considered preliminary and has not completed the complete QA/QC process.



## Legend

- S** Incident Location
- W** Water Column Sampling Location
- W** Surface Water Sampling Location







**Refugio Incident**  
**Summary of CTEH® Environmental Sampling Efforts**  
**July 23, 2015**

As part of response efforts, CTEH® began collecting product and environmental samples, i.e., water and/or sediment, on May 20, 2015. This environmental sampling has been conducted under a Unified Command-approved sampling plan. This report contains environmental sampling efforts completed to date by CTEH® in support of Refugio Incident response efforts. **Table 1**, below, provides a sample count for each type of environmental media collected by CTEH®. **Table 2** provides a summary of TPH<sup>1</sup> data reported in water samples to date. Maps of environmental sampling locations are provided as attachments.

**Table 1: Environmental Preliminary Sample Summary**  
**05/20/2015– 07/22/2015**

Media	Matrix	Sample Count
Water	Surface Water	284
	Water Column	54
	Culvert/Flush Water	9
Sediment	Beach Sediment <sup>2</sup>	67
	Ocean Sediment <sup>3</sup>	15
Soil	Potential Backfill Soil/Sand	57
	Section Four Soil	39
	Trench Excavation/Section One Soil	63
	Section Two/Three Soil	9
	Section 1 Background Soil	20
	Section 4 Background Soil	20
Petroleum	Product/Tar Ball Sample	222
	Sheen/Seep	14

<sup>2</sup> Beach sediment samples are collected from both the intertidal zone and on dry sand above the intertidal zone.

<sup>3</sup> Ocean sediment samples were collected at the same location as the water column samples.

<sup>1</sup> For the purposes of this report, TPH represents a summation of TPH-Oil Range Organics (ORO), TPH-Diesel Range Organics (DRO), and TPH-Gasoline Range Organics (GRO).

**Table 2: TPH<sup>1</sup> Preliminary Data Summary<sup>4</sup>**  
**05/20/2015– 07/22/2015**

	Location	Highest Detection		Most Recent TPH Result Received	
		Date	TPH (mg/L)	Date	TPH (mg/L)
Water Column	D001-S	6/6/2015	0.228	6/6/2015	0.228
	D001-M	5/22/2015	0.1	6/6/2015	ND
	D001-D	6/3/2015	0.5	6/6/2015	ND
	D003-S	5/31/2015	0.189	6/1/2015	ND
	D003-M	No detections		6/1/2015	No detections
	D003-D	No detections		6/1/2015	No detections
Surface Water	SW01	5/26/2015	11.9	7/5/2015	ND
	SW02	5/21/2015	677.111	7/5/2015	0.068
	SW03	5/26/2015	4.9	7/5/2015	0.4
	SW04	6/14/2015	16.6	7/5/2015	ND
	SW05	6/3/2015	63.1	7/5/2015	0.27
	SW09	6/5/2015	6.9	7/6/2015	0.049
	SW10	5/21/2015	1.89	5/21/2015	1.89
	SW11	6/6/2015	2.3422	7/6/2015	ND
	SW12	6/10/2015	5.1	7/6/2015	ND
	SW13	6/6/2015	1.9	7/6/2015	0.23
	SW14	No detections		6/9/2015	No detections
	SW15	7/6/2015	2.03	7/6/2015	2.03
	LASW01	No detections		6/8/2015	No detections
	VESW01	No detections		6/9/2015	No detections

<sup>4</sup> The data presented within the table is considered preliminary and has not completed the complete QA/QC process.

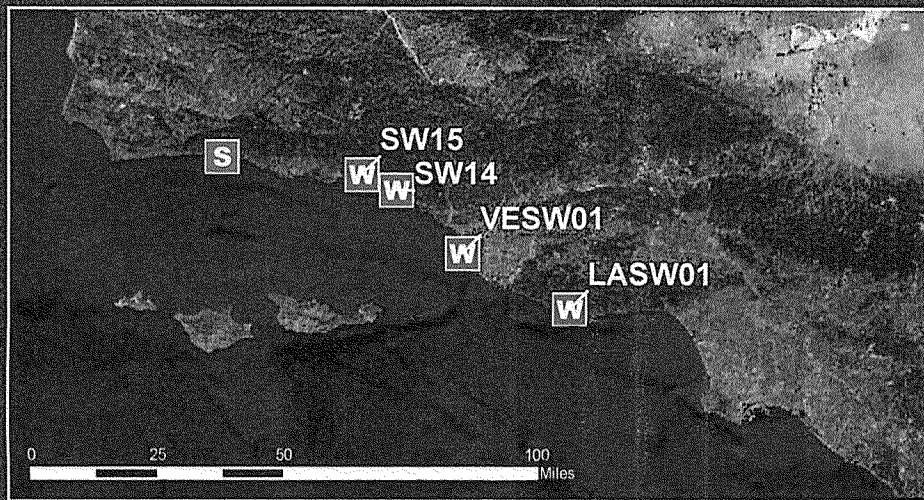
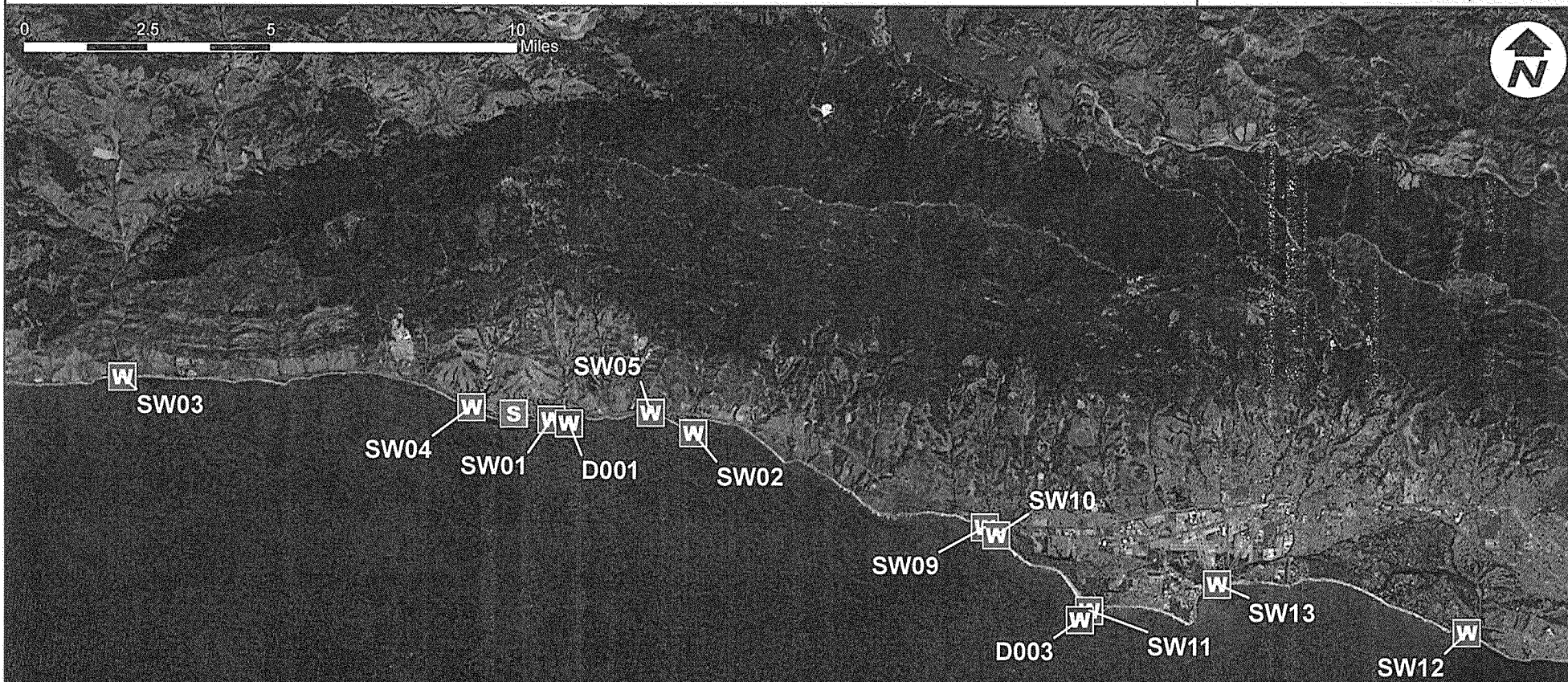


# Water Sampling Locations

Refugio Incident | May 20, 2015 to July 22, 2015

Project: 107292  
Client: Plains All American Pipeline  
City: Gaviota, CA  
County: Santa Barbara

0 2.5 5 10 Miles



Legend

- S** Incident Location
- W** Water Column Sampling Location
- W** Surface Water Sampling Location





## Legend

- S** Incident Location
- O** Ocean Sediment Sampling
- B** Beach Sand Sampling

